C. Type I and Type II Errors

Q. **EARLIER, YOU STATED THAT THE STATISTICAL TESTS ARE DESIGNED FOR A TYPE I ERROR RATE OF 5 PERCENT. CAN YOU ILLUSTRATE WHAT THIS MEANS?**

A. Yes. A Type I error is the risk that random variation will lead you to decide there is a disparity when, in fact, there is parity. To return to the analogy of the coin flip, a fair coin is one that has equal probability of turning up heads and tails. If you flip it 50 times, the expectation is that you will get heads 25 times and tails 25 times. But in fact this rarely happens. The laws of probability show that there is only about an 11 percent chance that a fair coin flipped 50 times will produce exactly 25 heads. So if you concluded there was "parity" only when you saw 50 heads, you would make the right call only 11 percent of the time. The other 89 percent of the time, you would see something other than 25 heads, and you would mistakenly think there was some "disparity" with the coin one way or the other. Declaring this fair coin to be biased would be a Type I error.

The Ameritech Illinois plan uses a different and more accurate decision rule. As I described above, the plan establishes a "critical value," at the point where there is a 95 percent certainty that disparity exists. In this example, we know from the laws of probability that there is about a 5 percent chance that 50 tosses of a fair coin will result in 32 or more heads. If our 50-flip test gives us the critical value of 32 heads or more, the plan presumes that there is a disparity. (The plan is not concerned with disparities that favor the CLEC, so here we are not concerned with a coin that yields too many tails.) That conclusion would be wrong about 5 percent of the time (because even a fair coin

1   generates 32 or more heads about 5 percent of the time), so the Type I error rate is 5

2   percent.

3   **Q.**   **YOU ALSO REFERRED TO A TERM CALLED "TYPE II" ERRORS. CAN**

4   **YOU ELABORATE?**

5   **A.**   Yes. A Type II error occurs when you mistakenly decide there is parity, when in reality

6   there is disparity. A coin might be unfairly biased such that it comes up "heads" more

7   than half the time on average – say, 70 percent of the time. But because of random

8   variation, you might still see 25 heads and 25 tails when you flip it 50 times, leading you

9   to decide the coin was fair. That would be a Type II error: a false "pass" (in contrast to a

10   Type I error, which is a false failure).

11   **Q.**   **IS THERE A WAY TO MEASURE THE RATE OF TYPE II ERRORS IN**

12   **PERFORMANCE TESTING?**

13   **A.**   Not with the information that is currently available. As with grading any other test, to

14   decide whether a statistical test yields the right answer or an error, one needs to define

15   what the right answer is. If a test suggests disparity, you need to know what parity is to

16   determine the probability of a Type I error. That is simple, because "parity" or equality is

17   a straightforward concept that is easy to define and agree upon. By contrast, if a test

18   suggests parity, the only way to know the probability of a Type II error is to define

19   *dis*parity. A small difference is harder to detect and thus easier to miss. To follow our

20   analogy, there might be some minute imperfection in a coin that leads it to turn up heads

21   50.000000001 percent of the time, but that difference is not material, and failing to detect

22   it would not be cause for concern.

1   Given that performance testing is being performed to promote competition in the

2   telecommunications market, it makes sense to say that a material difference in

3   performance is one that would be large enough to alter consumer behavior in a way that

4   would affect competition. If a difference in performance is too small to alter consumer

5   behavior or competition, failure to identify a disparity of this size (a Type II error) is not

6   relevant for the purposes of the remedy plan.

7 **Q.   HOW WOULD ONE GO ABOUT DEFINING MATERIALITY?**

8 A.   Obviously, materiality will vary depending on the measure and product being considered.

9   It may also depend on other factors that vary by geography or potentially by a range of

10   additional variables. The CLECs themselves agree, and suggest that telephony experts,

11   not statisticians, should be consulted to decide what constitutes a substantial or material

12   difference:3

13   While statistical science can be used to evaluate the impact of different choices of
14   these parameters [δ_j, and the alternative hypothesis among others], there is not
15   much that an appeal to statistical principles can offer in directing specific choices.
16   Specific choices [of δ_j] are best left to telephony experts.4

17   The CLEC proposal goes on to say that "[t]he bottom line here is that beyond a

18   few general considerations, like those given above, a principled approach to the choice of

19   the alternative hypotheses to guard against must come from elsewhere."5 Because the

20   definition of a material difference could depend on the measure, geographies, and on

21   sample sizes,6 you would have to do extensive research to find out what difference in

22   service provided to retail and wholesale customers would have a material impact on

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3 *CLEC Proposed Remedy Plan for Illinois*, filed March 12, 2001, p. 27.
4 *Id.*
5 *Id.* p. 28.
6 *Id.*

1   competition. That would in turn require a vast array of information about how customers

2   react to differences in levels of service. At this time, such information does not exist, and

3   it certainly does not exist for each performance measure, local telecommunications

4   product, or geographical disaggregation, let alone for every relevant combination that is

5   included in the remedy plan.

6 Q. **GIVEN THAT THERE IS NO PRACTICAL WAY TO DEFINE "DISPARITY,"**

7   **HOW CAN ONE ADDRESS THE RISK OF TYPE II ERROR?**

8 A.   Although there is no way to precisely measure and control Type II error in this context,

9   we do know enough about its tendencies to reasonably address it. First, we know that

10   Type II errors become less likely as the disparity becomes larger (because it is easier to

11   detect a large difference than a small one), or as the number of transactions increases

12   (because there is more information to include in the statistical analysis). That is helpful,

13   because we are most concerned with disparities that are large, or that affect a large

14   number of customers.

15 Q. **HOW DOES AMERITECH ILLINOIS' REMEDY PLAN APPLY THESE**

16   **PRINCIPLES?**

17 A.   Ameritech Illinois' plan is designed to use statistical methods that are generally accepted

18   in the scientific community. It starts by conducting statistical analysis on all performance

19   metrics.. If differences in service appear that meet or exceed a critical Z-value and for a

20   number of disparities listed in the K table, they are automatically presumed to reflect true

21   underlying disparity, even though there may be a valid reason for the observed difference

22   as well as a 5 percent chance that the difference is due to random variation (set at 5

23   percent) that there is really parity. This provides sufficient assurance that a substantial

1   disparity will be detected. As the observed wholesale performance gets farther from

2   retail, it is more likely that there is some true underlying disparity; conversely, as

3   observed wholesale performance gets closer to (or even better than) retail, there is less

4   likelihood of an underlying disparity.

5   **Q.   WHO DEVELOPED THIS APPROACH TO TYPE I AND TYPE II ERROR**

6   **FOUND IN THE AMERITECH ILLINOIS PROPOSAL?**

7   A.   It was first developed by AT&T, in the FCC's docket on performance measurement.

8   AT&T's expert stated in his affidavit that "AT&T proposes to set the Type I error at no

9   more than the conventional level of 5 percent." As he explained, "[t]his controls the

10   frequency of false alarms to be at most 5 percent while making the probability of Type II

11   errors small for violations that are of substantial size. Using a one-tailed test for Type I

12   error at about the 5 percent level thus strikes a reasonable balance."

13   As with the modified Z-test, a consensus formed around this methodology. Thus,

14   Bell Atlantic adopted the same approach for its remedy plan in New York. The FCC

15   endorsed this approach when it approved Bell Atlantic's application to provide long-

16   distance service in New York.

17   **III.   COMPARISON TO CLECS' PROPOSED METHODOLOGY**

18   **Q.   CAN YOU SUMMARIZE THE DIFFERENCES BETWEEN THE STATISTICAL**

19   **METHODOLOGY OF THE AMERITECH ILLINOIS REMEDY PLAN, AND**

20   **THE PLAN PROPOSED BY THE CLECS?**

21   A.   Yes. As I noted above, Ameritech Illinois' remedy plan reflects a consensus that was

22   achieved between incumbent LECs, CLECs, state commissions, and the FCC regarding

1   generally accepted statistical principles and techniques. The present CLEC plan,

2   however, abandons that consensus. The main differences between the two plans are:

3   (A)   **Type I and Type II Errors:** While the Ameritech Illinois plan uses the

4   conventional 95 percent confidence level, the CLEC proposal attempts to

5   balance between the two types of errors.

6   (B)   **Small Sample Sizes:** Where there are less than 30 transactions (which we

7   have found happens often), Ameritech Illinois uses tests designed to work

8   on small samples. The CLEC plan uses tests that are *not* designed for

9   small samples.

10   (C)   **Missing Pieces:** The CLEC plan contains a large number of missing

11   parameter values, which prevents the reader from fully understanding it or

12   implementing it in practice. The CLEC plan has many other missing

13   features such as tables and test definitions. The fact that the CLEC plan is

14   not fully developed is evident from the fact that when AT&T was asked to

15   provide programs and present simulated data following their plan they did

16   not, or were not able to, follow the written plan that they presented to the

17   ICC.

18   A.   "Balancing" Type I and Type II Errors

19   Q.   HOW DOES THE CLEC PROPOSAL DIFFER FROM AMERITECH ILLINOIS'

20   PLAN WITH RESPECT TO TYPE I AND TYPE II ERRORS?

21   A.   As I described above, Ameritech Illinois controls Type I errors by setting the risk of error

22   at 5 percent. This has the effect of addressing Type II errors as well, and is designed to

1   achieve a fair compromise: reducing the risk that remedies will be assessed in error

2   (Type I error) while reducing the risk that a large disparity would go undetected (Type II

3   error). The CLEC plan, however, purports to make the risk of Type I and Type II errors

4   exactly equal. As I discuss later, the "Type I – Type II balancing" proposed by the

5   CLECs does not provide balanced remedies. When it comes to the incentive structures

6   that they create, the CLEC plan is very unbalanced, creating hundreds of millions of

7   dollars of remedy payments even when Ameritech Illinois is providing service that is in

8   parity.

9 Q.   **IS IT FEASIBLE TO PRECISELY "BALANCE" TYPE I AND TYPE II ERRORS**

10   **IN THAT MANNER?**

11 A.   Not the way the CLECs have developed their plan. As I testified earlier, you cannot

12   measure Type II error without first defining the level of disparity you are looking for.

13   That would require extensive study of the impact differing levels of performance have on

14   each product, service, and geographical area. At present the CLECs have not provided

15   one and as far as I know no such analysis exists.

16 Q.   **HOW   DOES   THE   DEFINITION   OF   DISPARITY   AFFECT   THE**

17   **MEASUREMENT OF TYPE II ERROR?**

18 A.   The definition of disparity has a dramatic effect on the estimated Type II error, so an

19   accurate definition would be critical to make the CLEC balancing plan work. For a given

20   sample size, it is easier to miss a small disparity than a large one, so the risk of Type II

21   error is higher. Even the CLEC proposal states that the definition of disparity will greatly

1   influence the outcome of the tests, and that "even small disagreements among experts" in

2   the choice of that definition "could be very important."[7]

3   **Q.**   **HOW DOES THE CLEC PROPOSAL ADDRESS THIS ISSUE?**

4   A.   It doesn't. Instead, the CLEC proposal simply selects an arbitrary fixed definition of

5   materiality that it applies to all performance measures and categories. For continuous or

6   duration measures, it defines a material disparity at 0.25 of the population standard

7   deviation of the retail observations for the measure being tested. This value of 0.25 is

8   called δ_j ("delta") in their proposal and it is the same for every single test. The CLEC

9   proposal does not justify this choice other than to say that the CLECs agreed to a "joint

10   proposal as an opportunity to study the impact of the 0.25 delta pending the six month

11   review of the plan."[8]

12   **Q.**   **IS THAT A SATISFACTORY SOLUTION?**

13   A.   Absolutely not. The CLECs' arbitrary definition of disparity is clearly an unsatisfactory

14   method for defining an element that is of such vital interest in determining the outcome

15   of performance tests. And the CLECs themselves agree. The CLEC proposal says that a

16   fixed value of δ_j "does not seem sensible."[9]

17   **Q.**   **WHAT EFFECT WOULD THE CLEC BALANCING PROPOSAL HAVE?**

18   A.   In most samples encountered in the remedy plan it will raise the Type I error rate above 5

19   percent. To illustrate, assume we did a performance test on a sample of 50 coin flips.

20   Using the conventional 5 percent Type I error rate, the Ameritech Illinois plan would set

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[7] *CLEC Proposed Remedy Plan for Illinois*, p. 28.
[8] *Id.* p. 13.
[9] *Id.* p. 28.

1		the critical value at 32, and would conclude that the coin was unfair if heads came up 32
2		or more times. But the CLEC proposal would say that 29 heads or greater would indicate
3		disparity, raising the Type I error rate to 16 percent.

4 Q. **WHAT IS THE EMPIRICAL SUPPORT FOR SETTING THE MEASURE OF**

5   **MATERIAL DIFFERENCE AT 0.25?**

6 A.   There isn't any. I cannot stress enough that the CLECs' underlying assumption (that a

7   difference of .25 standard deviations is material enough that failing to assess remedies

8   would be a Type II error) is completely arbitrary. There is no empirical evidence about

9   consumer behavior to support it, and I have not seen anyone present any evidence about

10   consumer reaction to differences in service to support it in any of the proceedings that I

11   have attended or reviewed. The CLECs are trying to "balance" Type I error, which is

12   well defined, against a random number that they call Type II error. One could just as

13   easily say that a difference is not material unless it is 1 or 2, or more, standard deviations.

14 Q. **WHAT WOULD BE THE PRACTICAL EFFECT OF INCREASING THE TYPE I**

15   **ERROR RATE IN THE WAY THE CLEC PROPOSAL WOULD DO?**

16 A.   For instance, assume that all the performance tests had a Type I error rate of 30 percent.

17   Under this scenario, even if Ameritech's underlying performance was in perfect

18   compliance there would still be a finding of disparity - and Ameritech Illinois would still

19   pay remedies – on 30 percent of the performance tests. If there were 5,000 total

20   performance tests, Ameritech Illinois would pay 1,500 remedies based purely on testing

21   error. And if the average remedy were $20,000, Ameritech Illinois would pay $30

22   million in remedies where it should have paid none. As I show below, the amount of

1   undeserved remedies under the CLEC plan would work out to $28 million per month

2   even when Ameritech Illinois provided service that was in perfect parity.

3   Thus, there are two possible outcomes. One would be that Ameritech Illinois

4   would continue to provide perfectly fair or nondiscriminatory service, but still pay

5   CLECs $28 million per month in undeserved remedies. The CLECs would have their

6   cake and eat it too: benefiting in the market from nondiscriminatory performance, and

7   benefiting at the bank from undeserved remedies. The other possible outcome would be

8   that Ameritech Illinois would try to avoid remedies by discriminating in favor of CLECs.

9   That goes against the principles of parity and balance that the remedy plan is supposed to

10   enforce.

11   **Q.   BESIDES δ ARE THERE OTHER DEFINITIONS OF MATERIALITY THAT**

12   **THE CLECS INCLUDE IN THEIR PROPOSAL?**

13   A.   Yes, the CLECs have introduced two additional measures of materiality, ε_j and φ_j, which

14   are used to determine the material difference for rate and proportion measures,

15   respectively.[10] The CLECs provide no indication of what the values of ε and φ should

16   be. Without some definition of the values of ε_j and φ_j, the Type I –Type II balancing tests

17   that the CLECs propose cannot be calculated because there is no alternative hypothesis

18   (*i.e.*, no definition of disparity) to test against. Given that rates and proportions compose

19   approximately two-thirds of all performance measures tested, this omission makes the

20   CLEC proposal literally inoperable.

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10 *CLEC Proposed Remedy Plan for Illinois*, Attachment 2, pp. 4-6.

1 Q. HAS THE PROPRIETY OF THE CLEC BALANCING APPROACH BEEN

2   ADDRESSED IN ANY OTHER PROCEEDINGS?

3 A. Yes. As I mentioned earlier, KPMG Consulting is conducting statistical tests of

4   performance as part of its independent audit of OSS in Illinois and throughout the region.

5   It has consistently adopted the 5 percent Type I error rate used by Ameritech Illinois here,

6   and it has rejected the CLECs' proposed "balancing" of Type I and Type II errors. In so

7   doing, KPMG has explained that a single δ_j for all measures, as proposed by the CLECs,

8   would be "unjustified"11 because the definition of a material disparity "is likely to differ

9   by product."12

10 Q. IN THESE PROCEEDINGS, HAS ANY STATE COMMISSION RULED ON THE

11   CLECS' BALANCING METHODOLOGY?

12 A. Yes. The state commissions of Michigan and Wisconsin (the only ones to have

13   addressed the issue so far) have all upheld the 5 percent Type I error rate, and rejected the

14   CLECs' balancing approach. An ALJ in Indiana and the Staff in Ohio have also chosen

15   the 5 percent Type I error rate over the CLECs' balancing approach.

16   B. **Failure To Address Small Sample Sizes**

17 Q. HOW DO THE TWO REMEDY PLANS DIFFER WITH RESPECT TO SMALL

18   SAMPLE SIZES?

19 A. Both plans employ a Z-test to assess parity where there are 30 or more wholesale

20   observations. But when the sample size is under 30, Ameritech Illinois' plan uses a well-

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11 KPMG Consulting, Assessment of the OH/IN Stats Proposal and WI Appeal March 21, 2001, p. 3. (Attachment D hereto).
12 . *Id.*

1		known test, called a "permutation" test, which has specific benefits for small sample
2		tests. The CLEC proposal, however, still uses the modified Z-test.

3 **Q.** **IS THE CLEC PROPOSAL STATISTICALLY VALID?**

4 A. No. As I said earlier, the modified Z-test assumes that the distribution of the sample

5 means are close to normally distributed. This assumption may be valid for large samples

6 of data, but it is very unlikely to hold for the populations we are considering in small

7 sample sizes, such as those under 30.

8 **Q.** **WHAT IS THE EFFECT OF USING THE Z-TEST ON SMALL SAMPLE SIZES?**

9 A. It's likely that the statistical tests would become biased and invalid. We would no longer

10 be able to rely on the statistical tests to determine the magnitude of the Type I or Type II

11 errors. The 95 percent confidence level tests would no longer produce results we could

12 be confident in at the 95 percent level, and the Type I –Type II balancing tests proposed

13 by the CLECs would no longer balance the Type I and Type II error rates even if the

14 measures of material difference, δ_j, ε_j and φ_j, could be agreed upon.

15 **Q.** **HOW PREVALENT IS THIS ISSUE?**

16 A. Small samples are very common in practice. In fact, it has been our experience that small

17 samples with less than 30 observations comprise two-thirds of the remedy tests currently

18 performed in Illinois. Therefore the bias created by using Z-tests on small samples would

19 be likely to impact most of the tests performed. This lack of statistical tests appropriate

20 for small samples is a significant omission in the CLEC plan.

1   C.   **Missing Pieces**

2   Q.   **WHAT IS THE NEXT DIFFERENCE BETWEEN THE PARTIES' REMEDY**

3   **PLANS?**

4   A.   The next difference is one of practicality. Ameritech Illinois' remedy plan has been

5   implemented hundreds of times across multiple states. The plan description spells out the

6   calculations involved, and many of them have been captured on easy-to-use tables (such

7   as the table for "critical Z" values and "k" values). The CLEC plan has not been

8   implemented, and it contains values that need to be filled into formulas, tables that must

9   be completed, definitions of appropriate statistical tests for small samples that must be

10   specified and averages measured against benchmarks that must be calculated before the

11   plan can be implemented. As presented, implementing the CLEC plan would essentially

12   require guesswork about what those terms, tables and tests should be.

13   Q.   **DOES THE CLEC PLAN PROVIDE ALL OF THE VALUES NEEDED TO**

14   **PERFORM THE PARITY TESTS THEY PROPOSE?**

15   A.   No, the CLEC plan as written is missing values for critical parameters needed to test for

16   parity. As I described above, the CLEC proposal uses an arbitrary definition of

17   "disparity" or "δ_j" set at .25 standard deviations, for all performance measures that

18   compare a wholesale average to a retail average (such as the average time to install or

19   repair service). There are also measures that compare rates (such as the rate of "trouble

20   reports") and proportions (the percentage of missed due dates). The CLEC plan contains

21   two additional parameters, "ε_j" and "φ_j," that are used to determine the material

| 1 | | difference for rate and proportion measures, respectively.[13] But the plan provides no |
| 2 | | indication of what the values of ε_j and φ_j should be. |

3 **Q.** **WHAT EFFECT DOES THE LACK OF DEFINITION HAVE ON THE CLEC**

4 **PROPOSAL?**

5 A. As I said earlier, there is no way to estimate Type II error without first having a definition

6 of the disparity you are trying to detect. Thus, there is no way to "balance" Type II error

7 against Type I error. Without some definition of the values of ε_j and φ_j, the balancing test

8 that the CLECs propose cannot be performed because there is no definition of disparity

9 (also called the "alternative hypothesis") to test against.

10 **Q.** **HOW MANY PERFORMANCE MEASURES DOES THIS AFFECT?**

11 A. Rates and proportions comprise approximately two-thirds of all performance measures

12 tested. The CLECs' omission of ε_j and φ_j makes their proposal literally inoperable.

13 **Q.** **ARE THERE ADDITIONAL VALUES THAT NEED TO BE DETERMINED**

14 **BEFORE THE CLEC PLAN CAN BE CALCULATED?**

15 A. The value of parameter λ_j also is never defined. The value of this parameter is necessary

16 to calculate the critical Z value. Attachment 1 to the CLEC proposal just specifies that it

17 must be greater than or equal to 1. The CLEC proposal also never indicates why it should

18 be greater than or equal to 1. In Attachment 2, AT&T has suggested that there is normally

19 little reason to suggest that λ_j should be anything other than 1. But again AT&T does not

20 indicate under what conditions λ_j should be something other than 1 and whether certain

21 performance tests fit conditions where λ_j may be greater than 1.

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13 *CLEC Proposed Remedy Plan for Illinois*, Attachment 2, pp. 4-6.

1   Q.   **WHAT IS THE OTHER MISSING INFORMATION FROM THE CLEC PLAN?**

2   A.   The CLEC proposal is also missing other critical definitions and values needed to

3   implement the statistical tests and determine remedy payments. Some of these critical

4   omissions are discussed in this section.

5   One obvious omission is the lack of a test for benchmarks expressed as averages. The

6   CLEC plan is silent on this issue, creating another hole in their proposal that needs to be

7   filled before it can be fully considered.

8   In addition, there is no indication of which measures are considered to be eligible for

9   remedies. Ameritech/SBC's plan indicates whether a measure is classified as

10   "high/medium/low" or "none." The measures indicated as "none" are considered to be

11   diagnostic and ineligible for remedies.

12   Another problem arises from the incomplete "Benchmark Percentage Adjustments

13   for Small Data Sets."14 There is no explanation of how the table was created or how it

14   should be expanded to include the many small sample and benchmark combinations that

15   are not listed. The CLEC plan argues that a special table is needed to determine the

16   critical values for benchmark tests on small sample sizes. There is a table included in the

17   plan for adjusting the benchmarks for some sample sizes, but the table is incomplete. The

18   sample sizes included are 5-10, 20, and 30. There is no indication how tests that have 1-4,

19   11-19, or 20-29 observations should be handled. Also, there are only three benchmarks

20   listed: 85, 90, and 95 percent. Many other benchmarks are currently being implemented

21   for the performance measurements that are not included: 92, 94, 96.5, 97, 98, 99, and

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14 *CLEC Proposed Remedy Plan for Illinois*, p. 15.

1   99.5 percent. There is no indication how tests employing these benchmarks should be

2   performed and what level of performance would result in findings of disparity. Without a

3   complete table of adjustments for small samples for benchmarks, this remedy plan cannot

4   be implemented. This information would be a necessary component of a completed

5   CLEC plan.

6 Q. **ARE THERE ADDITIONAL OMISSIONS IN THE CLEC PLAN THAT MAKE**

7   **INCOMPLETE?**

8   Chronic remedy payments are not adequately defined for Tier II. The plan's

9   "recommended treatment for chronic failures is to assess a chronic failure over-ride in the

10   third consecutive month of non-compliant performance."[15] The plan defines "compliant"

11   for Tier I; however, it never defines "compliant" for Tier II. The plan goes on to describe

12   "indeterminate" test results for Tier II parity and benchmark comparisons which both

13   have $0 remedies associated with them. It is not clear, however, whether they are

14   considered "compliant." If they are not considered compliant, a definition of the level of

15   performance indicative of compliance for the aggregation of all CLECs must be

16   established. Clarity on this issue is essential since chronic remedies are $250,000 per

17   disaggregation for Tier II when the lines provided to the CLEC are less than 5 percent of

18   the total lines. Again, the CLECs should complete the proposal before the plan is

19   considered.

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15 *CLEC Proposed Remedy Plan for Illinois*, p. 17.

1   **IV.**   **ILLUSTRATION OF PLANS USING PERFORMANCE DATA**

2   **Q.**   **IN THE PRECEDING SECTIONS YOU COMPARED THE STATISTICAL**

3   **METHODOLOGIES USED BY AMERITECH ILLINOIS AND CLEC PLANS.**

4   **HAVE YOU ANALYZED THE DIFFERENCES IN REMEDIES PRODUCED BY**

5   **EACH PLAN?**

6   **A.**   Yes. I directed a calculation of remedies under the Ameritech Illinois plan, and reviewed

7   the calculation of remedies prepared by the CLECs. Both parties calculated and

8   exchanged remedies using the same performance data, in order to facilitate comparison.

9   **Q.**   **WHAT IS THE SOURCE OF THE PERFORMANCE DATA?**

10   **A.**   The data were taken from Ameritech Illinois' simulated data based on actual performance

11   data for the months of September – December 2000. Portions of the data were modified

12   to protect confidential and sensitive business information – for example, performance

13   statistics for individual CLECs were shuffled among CLECs to prevent anyone from

14   matching performance to the correct CLEC. The modifications were made pursuant to an

15   agreement between Ameritech Illinois and AT&T, the leading proponent of the CLEC

16   plan.

17   **Q.**   **COULD YOU PLEASE SUMMARIZE THE REMEDY AMOUNTS FOR THAT**

18   **PERIOD UNDER THE AMERITECH ILLINOIS PLAN?**

19   **A.**   In December 2000, Ameritech Illinois was found compliant in 91.4 percent of the

20   performance measurement tests that are subject to Tier 1 remedies (payable to CLECs)

21   under its plan. The score on Tier 2 remedies (payable to the State) is 76.1 percent. With

22   this level of compliance, the remedies for December 2000 under Ameritech's proposal

1   would be over $6 million - $6,293,400 to be precise. ($3,714,800 of this amount would

2   be paid to CLECs under Tier 1 of the Ameritech plan; $2,578,600 would be paid to the

3   State under Tier 2).

4   Q.   **WHAT WOULD THE REMEDIES HAVE BEEN UNDER THE CLEC**

5   **PROPOSAL?**

6   A.   Despite the incompleteness and ambiguities of the CLEC plan, AT&T has provided its

7   own estimates of remedies under the CLEC plan using the simulated data. As I will

8   discuss later, the AT&T estimates in many cases do not accurately reflect the CLEC plan

9   documentation, and contain a number of errors, so their numbers should be considered

10   provisional. AT&T estimates a total remedy amount of $56.1 million dollars for

11   December 2000 ($26.6 million for Tier 1 and $29.5 million for Tier 2) – almost ten times

12   as high as the Ameritech Illinois plan.   What is more worrisome is that Ameritech

13   Illinois will still have to pay high remedies even after it achieves parity in service under

14   the CLEC plan.

15 Q.   **USING THE SIMULATED DATA FOR DECEMBER 2000, WHAT WOULD YOU**

16   **EXPECT THE CLEC PLAN REMEDIES TO BE IF ALL MEASURES WERE**

17   **ACHIEVING PARITY OF SERVICE?**

18 A.   We have made a number of assumptions about issues they have left open in their plan to

19   determine the magnitude of remedies implied by the plan.16 These should be considered

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16 Because the CLEC proposal is incomplete, a significant number of assumptions had to be
made to perform this estimate. This list is too voluminous to detail here. However, some of the
important assumptions include the following: (1) ε_j and φ_j, the parameters that determine a
material difference, were assumed to lead to the same result as using $\delta_j = 0.25$; (2) λ was
assumed to be 1; (3) only one month of data was used, reducing the estimated remedies; (4) the
small sample size benchmark table was completed using methods we believe are consistent with

1   approximate figures that will change once the CLECs have fully specified their plan.

2   Based on our estimates using the simulated December 2000 data, the CLEC proposal

3   would produce remedy payments of $18.1 million in Tier 1 remedies and $9.9 million in

4   Tier 2 remedies. This totals to $28 million per month *even when Ameritech Illinois in*

5   *providing service that is in parity.* Over the course of a year, this amount will add up to

6   over a one-third of a *billion* dollars. In order to avoid such steep penalties, Ameritech

7   Illinois would have to provide the CLEC customers with better service than its own retail

8   customers.

9 Q. **WHY ARE THE CLEC REMEDIES SO MUCH HIGHER, GIVEN 91.4**

10   **PERCENT COMPLIANCE?**

11 A. Even when Ameritech Illinois is providing parity service, the actual outcome of the

12   service will fluctuate due to random variation. The statistical methods of the CLECs'

13   plan permit large Type I error rates, well above the conventional levels of 5 percent, in

14   the name of balancing.

15   As a result, the CLEC proposal does not give meaningful and significant incentives for

16   compliance with performance measurements. Ameritech Illinois maintains that remedies

17   should not be paid unless the results demonstrate with a reasonable degree of scientific

18   certainty that the process used for CLEC customers differs from the process used for

19   retail customers. In other words, the difference in performance outcomes must come

20   from something other than random variation or factors outside the control of Ameritech

the few entries in the table included in the CLEC plan; (5) no remedies were calculated for benchmark tests performed on averages because the CLEC plan proposes no method for this test; (6) benchmarks measured as rates were treated the same as those measured as proportions; (7) diagnostic measures were not eligible for remedies. Literally dozens of assumptions were needed to make the current CLEC plan functional.

1   Illinois. The Ameritech Illinois remedy plan gives the proper incentives to the ILEC. By

2   requiring Ameritech Illinois to pay remedies when poor service is given and limiting

3   remedies when poor service is due to random chance, the Ameritech Illinois remedy plan

4   gives the proper incentives to the ILEC: to provide parity service to avoid remedies. The

5   CLEC proposal, by contrast will lead to remedies, even "severe failure" remedies, for

6   differences in performance that are not statistically significant.

7   **Q.**   **WHAT IS THE CAUSE OF THIS PROBLEM?**

8   A.   As I described above, the CLEC plan has a very small threshold (critical Z) for declaring

9   disparity when there are few CLEC observations. In fact, for some tests this threshold is

10   so small that statistically significant differences would require a Z-score three times

11   larger than the "severe failure" critical values as defined by the CLECs. The CLECs are

12   assigning "failure" and "critical failure" to a large extent by random chance. While the

13   Ameritech Illinois plan is designed to maintain an overall 5 percent Type I error rate, the

14   CLEC plan's Type I error rates exceed 5 percent in the vast majority of the cases.

15   **Q.**   **HOW PERVASIVE ARE HIGH TYPE I ERROR RATES?**

16   A.   Table 2, below, shows the proportion of remedy-eligible parity tests within the simulated

17   data given various levels of Type I error rates. Recall, the Type I error rate represents the

18   probability that the statistical test falsely declares disparity when the underlying

19   performance is actually in parity. Ameritech Illinois' plan sets the Type I error rate at the

20   conventional level of 5 percent. The CLECs' balancing plan does not do this. Using the

21   AT&T provided critical Z values for their simulated calculations, we determined that

22   close to seven out of every eight Tier 1 remedy eligible parity tests have Type I error

23   rates that exceed 5 percent. Furthermore, the probability of falsely declaring disparity

1   when the underlying performance is in parity is over 45 percent in more than 23 percent

2   of the Tier 1 tests. Testing at this level provides little more certainty than the outcome of

3   a flip of a coin. For this reason, the CLEC plan results in high remedy dollars being paid

4   even under parity conditions: each month many performance tests and remedies are

5   assessed in an arbitrary and capricious manner under the CLEC plan, ensuring that

6   CLECs receive a stream of remedy payments each month even if performance is in

7   parity.

8
9

Table 2. CLEC PLAN: Proportion of Tests With A Given Type I Error Rate: Simulated Data, Tier 1, Remedy Eligible Tests.

Probability of Type I Error α	Proportion of Tier 1 Tests with Given Type I error Rate	Cumulative percent of Tier 1 Tests with Type I Error Rate
>45 %	23.4 %	23.4 %
35 %- 45 %	31.6 %	55.0 %
25 % - 35 %	15.8 %	70.8 %
15 %-25 %	8.8 %	79.6 %
5 % - 15 %	7.1 %	86.8 %
0 % - 5%	13.2 %	100 %

10

11   Table 3 shows the proportion or remedy eligible parity tests under the CLEC plan within

12   the simulated data given various levels of Type I error rates at the *Tier 2* aggregate level.

13   Since these tests have larger sample sizes, there will be more scientific certainty than for

14   Tier 1. However, only a little over one-third of the tests yield a 95 percent confidence

15   level or higher. Almost the same percentage of Tier 2 remedy eligible tests have Type I

16   error rates of 35 percent or higher.

17

1
2
Table 3. CLEC PLAN: Proportion of Tests With A Given Type I Error Rate:
Simulated Data, Tier 2, Remedy Eligible Tests.

Probability of Type I Error α	Proportion of Tier 2 Tests with Given Type I error Rate	Cumulative percent of Tier 2 Tests with Type I Error Rate
>45 %	0.8 %	0.8 %
35 %-45 %	33.1 %	33.9 %
25 %-35 %	13.0 %	46.9 %
15 %-25 %	9.2 %	56.1 %
5 %-15 %	9.2 %	65.3 %
0 %-5 %	34.7 %	100 %

3

4 Q. **CAN YOU PROVIDE A COUPLE OF EXAMPLES OF THE RAMIFICATIONS**

5 **OF THESE HIGH TYPE I ERROR RATES ON TESTS CONDUCTED USING**

6 **THE SIMULATED DATA?**

7 A. The following two examples within the simulated results provided by AT&T illustrates

8 clearly that under the CLEC plan, remedies would routinely occur without scientific

9 proof that disparity exists.

10 The first example comes from AT&T's November 2000 simulation results for CLEC

11 #205, Average Delay Days for Ameritech Caused Missed Due Dates (#32). The

12 disaggregation is business – field work within the Chicago Suburban metro area.[17] In the

13 simulated data, CLEC #205 customers had 1 missed due date that caused a delay of 7.66

14 days for this disaggregation. The Ameritech Illinois retail customers had an average

15 delay of 6.75 days for 218 missed due dates. The important parameters and results for

16 this example are listed in Table 4.

17 Table 4. Simulated Data Used For Example 1: Tier 1 - Average Delay Days For AIT Caused
18 Missed Due Dates – Business – Fieldwork – CLEC 205 – Chicago Suburban – November 2000.

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[17] These data can be found in the simulated results provided by AT&T on row 1.654 of 't1 parity int and rates 2 of 3.xls' within the intervals tab.

CLEC	# CLEC Orders	ILEC	# ILEC Orders	Z value
7.66	1	6.75	218	0.128
Critical Z (z*) – CLEC Plan	Type I Error (α) - CLEC Plan	Critical Z - Ameritech Plan	Remedy - CLEC Plan	Remedy - Ameritech Plan
0.125	45 percent	1.75	$2,503	$0

The question to be answered is how likely is it that the CLEC process that resulted in 7.66 days is different from the ILEC process that resulted in 6.75 days? If we looked at one miss from the ILEC process, would we be surprised to see that the order was delayed 7.66 days? What level of proof is necessary? The Ameritech Illinois plan requires us to be 95 percent certain that the underlying processes are indeed different. The CLEC plan requires us to be only 55 percent certain ($Z^* = 0.125$) before declaring disparity.[18] This is little more certainty than the odds of getting heads in a 50-50 coin flip. Indeed, the CLEC determination of disparity is almost virtually arbitrary: the Z-value is 0.128, which is much lower than conventional level of 1.65 or more used to determine disparity. Yet, the CLEC plan would have Ameritech Illinois pay $2,503 in remedies to this CLEC for this single order.

The second example comes from AT&T's October 2000 simulation results for CLEC #245, Mean Installation Interval (#27). The disaggregation is residence – no fieldwork within the Illinois South metro area.[19] In the simulated data, CLEC #245 customers had 1 residential – no field work installation which required 1 day to install. The corresponding Ameritech retail installations averaged 0.74 days. Once again, if we looked at one installation from the ILEC process, would we be surprised to see that the

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[18] For these examples, I am following Ameritech's convention of a positive Z value denoting worse CLEC performance than ILEC performance.

[19] These data can be found in the simulated results provided by AT&T on row 239 of 't1 parity int and rates2 of 3.xl's within the intervals tab.

1   install took 1 day given the other installations? A summary of this example is provided

2   in Table 5.

3   Table 5. Simulated Data Used For Example 2: Tier 1 – Mean Installation Interval – Residential
4   – No fieldwork – CLEC 245 – Illinois South – October 2000.

CLEC	# CLEC installs	ILEC	# ILEC Installs	Z value
1.00	1	0.74	12,120	0.417
Critical Z (z*) – CLEC Plan	Type I Error (α) - CLEC Plan	Critical Z - Ameritech Plan	Remedy - CLEC Plan	Remedy - Ameritech Plan
0.125	45 percent	1.68	$25,000	$0

5

6   As in the first example, the CLEC plan required a confidence level of only 55

7   percent (z* = 0.125) before declaring disparity. Furthermore, the CLEC plan will assess

8   "severe failure" penalties over one-third of the time (35.3 percent) even when parity of

9   service is given (3z* = 0.37). In this example based on the simulated data, the Z value is

10   0.42, which is much lower than conventional level of 1.65 and higher used to determine

11   disparity. Yet, the CLEC plan would have Ameritech Illinois pay the maximum remedy

12   possible to this CLEC: $25,000 for this single installation. Under the CLEC plan,

13   CLECs with a single residential – no field visit installation have more than a one out of

14   three chance of receiving $25,000 in remedies when Ameritech's service to CLEC and

15   ILEC customers is *not* distinguishable with any reasonable degree of scientific certainty.

16   These two examples illustrate why Ameritech Illinois would be forced to provide

17   superior service to the CLECs in order to avoid paying massive remedies. Unless

18   Ameritech provides CLEC customers with service that is significantly better than it

19   provides to its own retail customers, Ameritech will be forced to pay these types of

20   remedy payments due simple random variation, even when the underlying service is in

21   parity.

| 1 | Q. | ARE THERE CASES WHERE THE CLEC PLAN WILL RESULT IN SMALLER |

1 Q. **ARE THERE CASES WHERE THE CLEC PLAN WILL RESULT IN SMALLER**

2   **REMEDIES FOR THE CLECs?**

3 A. Yes. Earlier in this document as well as in the above examples, I have shown that the

4   CLEC plan fails because it frequently sanctions service when parity exists. The next two

5   examples illustrate that the CLEC plan also founders (although less frequently) because it

6   fails to sanction service that is actually in disparity. This occurs because when sample

7   sizes are large, the CLEC plan's statistical methodology requires an absurdly *high* level

8   of confidence for parity tests. The next two examples illustrate this point by showing the

9   CLEC plan's comparison of remedy assessments when the level of disparity is

10   statistically significant in the simulated data.

11   The first example comes from AT&T's November 2000 simulation results for Tier 2,

12   Mean Installation Interval (#27). The disaggregation is business – no fieldwork within

13   the Chicago Suburban metro area.[20] The aggregate CLEC performance for this measure

14   was 4.28 days for 1,154 installations. The average installation interval for retail

15   customers was 1.21 days for 9,583 installations. Given the large relative difference and

16   the many installations affected, it is not surprising that the computed Z value for the

17   performance difference is 5.56. This Z value indicates that there is less than a 1 in a

18   million chance that the CLEC service and the ILEC service are in parity. Obviously,

19   these results are statistically significant and remedies should be paid. Ameritech's

20   remedy plan takes into account the size of the relative difference in performance and the

21   number of CLEC installations affected (1,154) in order to determine a remedy amount of

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[20] This data can be found in the simulated results provided by AT&T on row 200 of 't2 parity. xls' within the intervals tab.

1    $442,500. This remedy amount exceeds anything found in the CLEC plan. The CLEC

2   plan's remedy amount would be $0. A summary of this example is provided in Table 5.

3   Table 6. Simulated Data Used For Example 3: Tier 2 – Mean Installation Interval – Business –
4   No fieldwork – Chicago Suburban – November 2000.

CLEC performance	# CLEC lines	ILEC performance	# ILEC Lines	Z-Value
4.28	1,154	1.21	9,583	5.56
Critical Z (z*) – CLEC Plan	Type I Error (α) – CLEC Plan	Critical Z – Ameritech Plan	Remedy – CLEC Plan	Remedy – Ameritech Plan
4.01	~0 percent	1.70	$0	$442,500

5

6   The CLEC plan requires that the Z-value exceed 6.68 (5/3z*=6.68) for this

7   particular test before remedies are paid. The Z-value will exceed this critical Z-value less

8   than one out of every billion times when the performance is actually parity. The stringent

9   requirements of statistical confidence in the above example is in stark contrast to the

10   plan's requirement of only a 45 percent Type I error rate when there is only 1 CLEC

11   installation as noted earlier. Do the first two examples deserve remedies more than the

12   third example? The CLEC plan thinks so.

13   The second example comes from AT&T's December 2000 simulation results for

14   CLEC 91, Trouble Report Rate (#37). The disaggregation is residential within the

15   Chicago Suburban metro area.[21] The CLEC performance for this measure is 36 troubles

16   per every 100 lines. This rate is 20 times as high as the trouble report rate for retail

17   customers 1.7 troubles per every 100 lines. The main features of this example are listed

18   in Table 7.

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[21] This data can be found in the simulated results provided by AT&T on row 995 of 'tl parity int
and rates2 of 3. xls' within the rates tab.

1 Table 7. Simulated data used for example 4: Tier 1 – Trouble Report Rate – Residential – CLEC
2   91 – Chicago Suburban – December 2000.

CLEC	# CLEC lines	ILEC	# ILEC Lines	Z value
0.36	12,840	0.02	1,455,336	300.20
Critical Z (z*) – CLEC Plan	Type I Error (α) –CLEC Plan	Critical Z - Ameritech Plan	Remedy - CLEC Plan	Remedy - Ameritech Plan
14.10	~0 percent	1.71	$25,000	$2,197,500

3   Note: the Z value is CLEC plan's LCUG-Z

4   Coupling this difference in performance with the fact that there are over 12,840

5   lines (4,637 troubles) affected and this disaggregation has been in disparity for three

6   consecutive months, one expects a severe remedy. In fact, both the CLEC plan and

7   Ameritech's remedy plan agree on this. The CLEC plan gives the CLEC the most severe

8   Tier 1 remedy possible under their plan, $25,000. The Ameritech plan takes into account

9   the difference between the performances and the number of months in disparity (3), as

10   well as the number of lines affected. The resulting remedy under the Ameritech remedy

11   plan is over two million dollars, $2,197,500. Contrast this with the $25,000 under the

12   CLEC plan. This is the exact same remedy that the CLEC plan would levy for the 1

13   installation that was in parity by conventional testing standards described in Example 2

14   above. Clearly, the CLEC plan is inconsistent in the manner that it provides remedies.

15 Q. **YOU HAVE MENTIONED THAT THE CLEC PLAN IS INCOMPLETE AND**

16   **UNABLE TO BE IMPLEMENTED AS CURRENTLY WRITTEN. WHAT DO**

17   **YOU MEAN BY THAT?**

18 A. There are many unresolved issues within the plan. We were hoping that when we

19   received the spreadsheet program and the simulated CLEC plan results from AT&T that

20   we would be able to learn more about the omissions of the written document. However,

21   the receipt of these items only demonstrated and revealed more inconsistencies in the

1   CLEC plan. It appears that even AT&T does not understand its own plan. We now have

2   many new concerns about the CLEC plan.

3   Q.   **WOULD YOU PLEASE COMPARE (1) THE CLEC PLAN DOCUMENTATION**

4   **SUBMITTED ON MARCH 12, 2001, (2) THE SPREADSHEET PROGRAM**

5   **PROVIDED BY AT&T TO CALCULATE REMEDIES FOR THEIR PLAN (01-**

6   **0120PROXYCALCULATIONS(6-18-01)) AND (3) THE SIMULATED CLEC**

7   **PLAN REMEDY RESULTS PROVIDED BY AT&T?**

8   A.   There are numerous inconsistencies and issues. For sake of brevity, I have included a

9   table summarizing some of the issue and inconsistencies between the CLECs' three

10   interpretations of their own proposed plan. The first few issues are list instances where

11   the CLEC plan documentation submitted on March 12, 2001 is specific about the

12   methods to be used, but the CLEC plan is being ignored by AT&T in their spreadsheet

13   program or their simulated remedy results. That is, the spreadsheet program and/or the

14   simulated remedy results provided by AT&T are inconsistent with the CLEC plan. I have

15   confined myself to issues that do not appear to be mistakes by AT&T, but rather

16   intentional changes.

17   *Issue #1 – Treatment of Affiliate Data.* AT&T gives us three different answers about how

18   to handle affiliate data. The simulated remedy results ignore the affiliate data, even

19   though we provided the data. Page 5 of the CLEC plan says to compare the CLEC

20   service to the better of the retail customers or SBC/Ameritech's affiliate customers. The

21   spreadsheet program calculates separate remedies for the retail data and affiliate data then

22   adds them together. Which is it? The CLECs' simulation does one calculation, the

1   CLECs' spreadsheet program indicates a different calculation and neither is what the

2   CLEC plan says should be done.

3   *Issue #2 – Chronic Remedies.* On page 17 of the CLEC plan, "chronic" remedies are

4   issued whenever a disaggregation has been in disparity for three consecutive months.

5   These remedies are set at the maximum amount for the applicable tier. The spreadsheet

6   program implemented chronic remedies. However, AT&T reports $0 in chronic

7   remedies for the simulated data for every disaggregation, even those that were in

8   disparity for three months. AT&T apparently either does not understand its own

9   proposal, or was not able to implement it.

10   *Issue #3 – The Determination of the Critical Z.* The CLEC plan defines the

11   determination of the Critical Z in two different ways. Attachment 1 tells us to use the

12   *balanced Truncated Z* and provides a formula for determining the critical Z on page 27.

13   This formula cannot be implemented because it has many undefined terms. Attachment 2

14   tells us to use the *balanced modified Z* and gives 3 formulas to determine the critical Z:

15   (1) one for intervals using δ_j on pages 3 and 4, (2) one for proportions using ϕ_j on page 5,

16   and (3) one for rates using ϵ_j on page 6. The formulas using ϕ_j and ϵ_j cannot be

17   implemented because values were never assigned to these terms. All three of these

18   formulas are inconsistent with the Truncated Z formula in Attachment 1. Therefore,

19   within the CLEC plan itself, there are two different approaches that can be taken.

20   The CLECs add more inconsistencies on this topic with their spreadsheet

21   program, which follows neither the formulas for the balanced Truncated Z nor the

22   balanced modified Z. The spreadsheet program leaves out ϕ_j and ϵ_j, which were an

-53-

1   integral part of the CLECs' proposal for rate and proportion parity calculations. Again,

2   AT&T has proposed two different calculations, but decided to implement a third method

3   not listed in its proposal. Will the CLECs provide values for ϕ_j and ε_j? Will Ameritech

4   have a chance to comment on their proposed values? Will AT&T provide a different

5   value of ϕ_j and ε_j for each measure, geography and product as it states would be required

6   for δ_j. Is Ameritech expected to know what AT&T intends without seeing it on paper?

7   *Issue #4 – Treatment of Benchmarks with Averages.* Benchmark tests for averages are

8   ignored within the CLEC plan. The spreadsheet program and the AT&T results both

9   have benchmarks for average results with new formulas that have never been proposed in

10   any other state within the Ameritech five state region to date, including Illinois![22] Should

11   Ameritech follow the documented plan or the plan use in the spreadsheet program?

12   *Issue #5 – Remedies for Diagnostic Measures.* The CLEC plan does not mention the

13   treatment of measures that are labeled as "none" (as opposed to "low", "medium," and

14   "high") within the business rules. The simulated remedy results had remedies for all

15   measures provided to them (with the exception of measures 114.1 (Tier 2) and MI 15, no

16   reason given). Ameritech provided AT&T, within the simulated data, a column called

17   "remedy eligible" indicating the sub-measures eligible under the Ameritech plan, but this

18   field was ignored. Was this a mistake by AT&T or does it mean to have remedies paid

19   on every single measure including the ones labeled "none"? What about 114.1 and MI

20   15? Were they meant to be excluded?

---

[22] There appears to be a mistake with the remedy results provided by AT&T for the average benchmark portion of PM #5 for Tier 2. The simulated remedy results reversed the remedy results. That is, remedies were levied when the CLEC performance was better than the benchmark and were not levied when the CLEC performance was worse than the benchmark.

1   Q.   **WHAT OTHER ISSUES DID YOU FIND?**

2   A.   There were several issues involving the remedies for percentage benchmarks. There has

3   always been a question of how to handle small sample sizes. The CLEC plan provides a

4   table on page 15, but this table is incomplete and is missing essential entries. The

5   question is what to do for those benchmarks and small sample size combinations not

6   listed within the table. The spreadsheet program and the simulated remedy results give

7   us two different answers – neither answer is completely consistent with the CLEC plan

8   itself. Again, should Ameritech follow the plan as documented by the CLECs or the one

9   AT&T implemented?

10   *Issue #6 – Percentage Benchmark Small Sample Size Adjustments.* The CLEC plan only

11   adjusts the benchmarks for certain benchmarks – 85 percent, 90 percent, 95 percent. It

12   also only adjusts the benchmark for certain sample sizes: 5-10, 20, 30. The spreadsheet

13   program has a formula to adjust the benchmark regardless of the sample size. This

14   formula is to make the benchmark equal to the quantity of the benchmark times the

15   number of CLEC observations rounded down, divided by the number of CLEC

16   observations (rounddown(CLEC obs * benchmark)/(CLEC obs)). This formula is

17   inconsistent with the table on page 15 of the CLEC plan for a sample size of 7

18   observations and a benchmark of 85 percent. The CLEC adjusted benchmark is 85

19   percent, whereas the spreadsheet program result is 71.4 percent. In contrast, the

20   spreadsheet program does not apply small sample size adjustments to the benchmarks.

21   The CLEC plan, the spreadsheet program, and the simulated results give three different

22   methods for adjusting benchmarks. Unless the CLEC plan is rewritten, benchmark

23   measures will not be able to be implemented.

1   *Issue #7 – Percentage Benchmark Remedy Implementation Issue.* The simulated

2   remedies provided by AT&T use formulas that are entirely inconsistent with both the

3   CLEC plan and their spreadsheet program that they provided.[23] The AT&T remedy

4   results indicate that it is unable to calculate percentage benchmarks under its own plan.

5   **Q.**   **WHAT ARE SOME OTHER ISSUES YOU HAVE FOUND?**

6   **A.**   There are a few issues involving Tier 2 remedies for parity tests, one for each type of test.

7   *Issue #8 - Tier 2 - Parity tests for Intervals issue.* The CLEC plan sets remedies equal to

8     $25,000*n when the remedies qualify as "market constraining." The spreadsheet

9   program sets these remedies equal to $81,250 ($325,000*δ). The simulated remedy

10   results seems to set them equal to $25,000*n where n equals 8.

11   *Issue #9 - Tier 2 - Parity Tests for Percentages Issue.* The spreadsheet program's

12   affiliate comparison remedy is always $0. As noted above, the CLEC simulated data

13   ignore the affiliate data.

14   *Issue #10 - Tier 2 - Parity Tests for Rates Issue.* The CLEC plan does not have remedies

15   unless the Z value exceeds the critical Z by a factor of 5/3. The spreadsheet program has

16   remedies whenever the Z value exceeds the critical Z. The simulated results provided by

17   AT&T are consistent with the CLEC plan, but inconsistent with the spreadsheet program.

18   **Q.**   **WHAT ARE THE OTHER ISSUES LISTED WITHIN THE TABLE?**

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[23] The CLEC plan and the spreadsheet program appear to be consistent except for the cutoff point where remedies are automatically $25,000. The spreadsheet program has a "2" that should be removed and the "<" should be ">". While this is a significant problem within the spreadsheet program, this issue will focus on the remedy results provided by AT&T because these appear to have even larger discrepancies with the plan being proposed by the CLECs.

1   A.   *Issue #11 – LCUG Z value for Retail Percentages of 0 percent or 100 percent.* The

2   LCUG-Z results in a missing Z value whenever the retail percentage is 0 percent or 100

3   percent. The Ameritech plan uses the pooled percentage rather than the retail percentage

4   to avoid this issue. There is no description given within the CLEC plan of how to handle

5   this issue. The spreadsheet program does not take measures to avoid this issue resulting

6   in errors for the Z value as well as the remedy results whenever the retail performance is

7   0 percent or 100 percent. The simulated remedies substitutes 50 percent for the retail

8   performance within the denominator of the LCUG Z value formula for all but six tests.

9   These six tests were all assigned missing Z-values and $0 remedies. The inconsistencies

10   in the treatment of retail percentages with values of 0 percent or 100 percent are almost

11   Byzantine.

12   *Issue #12 – LCUG Z value for Retail Rates of 0 percent.* The LCUG-Z results in a

13   missing Z value when the retail rate is 0 percent. The Ameritech plan uses the pooled

14   rate rather than the retail percentage to avoid this issue. There is no description given

15   within the CLEC plan of how to handle this issue. The spreadsheet program does not

16   take measures to avoid this problem resulting in errors for the Z value as well as the

17   remedy results whenever the retail performance is 0 percent. The simulated remedies

18   substitute a numerator of 1 for the retail records for Tier 1 and sets the Z value equal to 0

19   regardless of the CLEC performance for Tier 2. Neither of the solutions observed in the

20   simulated remedy results is consistent with the CLEC plan or simple intuition.

21   *Issue #13 – Tier 2 multiplier – n.* The CLEC plan defines the Tier 2 multiplier, "n," for

22   remedies as the percentage of the aggregate CLEC lines relative to the ILEC lines. The

23   multiplier is 10 for 0-5 percent and 8 for 5-10 percent in the CLEC plan. The CLEC plan

1   says that the value of "n" was 10 on the date the plan was filed. The spreadsheet program

2   also uses a multiplier of 10. The simulated results use a multiplier of 8 for most tests, but

3   use 10 for some others. How is it possible for the multiplier to be 8 for some tests and 10

4   for others? The CLEC plan only allows for a single "n" for the whole state.

5   Q.   ARE THERE ANY ISSUES REGARDING THE AT&T SIMULATED REMEDY

6   RESULTS NOT LISTED WITHIN THE TABLE?

7   A.   I have listed below some of the data issues within the AT&T simulated remedy results.

8   This list is not intended to be complete.

9   •   PM 115 calculates "severe failure" remedies for 57 Tier 1 records even though the

10   performance is perfect at 100 percent delays.

11   •   PM 105 calculates "severe failure" remedies for 6 records even though the

12   performance is perfect at 100 percent on time.

13   •   PM 96 calculates parity incorrectly. It finds parity regardless of CLEC

14   performance.

15   •   The AT&T simulation classified PM 54, the failure frequency (trouble report rate)

16   for design products, as a percentage measure, when it should be classified as a

17   rate.

18   •   Most, but not all, of the metro areas classified as "UNDETERMINED" were not

19   included in the simulated remedy results provided by AT&T.

1   •   The data for PM 114.1 (Tier 2), PM 98 (Tier 1 October) and MI 15 were not

2   included. In addition, there are 10 Tier 1 and 10 Tier 2 tests not included.

3   •   One test for metro area "ALL" as well as the individual metro areas was included,

4   leading to double counting.

5   •   The parity results for one MI 12 record were overwritten by the totals for the

6   column.

7   •   Interval parity tests where the retail standard deviation is zero are included for

8   Tier 2 (with one exception) and excluded from Tier 1.

9   Q.   **HAVING   REVIEWED   THE   PROPOSED   CLEC   PLAN   AND**

10   **IMPLEMENTATION, CAN YOU DRAW ANY GENERERAL CONCLUSIONS**

11   **ABOUT THE PLAN?**

12 A.   Yes, I think there are at least two critical features that a parity testing and remedy plan

13   must have. First, the plan must be implementable. This means that the plan is

14   documented accurately, including the necessary methods, calculations, parameter values,

15   and tables to determine parity and remedies. Second, the plan must provide incentives

16   that promote parity of service and competition. The CLEC plan does neither of these.

17   The CLEC plan has many inconsistencies and omissions that make it impossible to

18   implement. The CLEC plan itself delivers some of the most scathing criticism of the

19   methods the CLECs have proposed, noting that critical aspects of the CLEC plan do not

20   make sense. In addition, the CLEC plan provides incentives that promote disparity and

21   discrimination against customers of Ameritech Illinois or that generate enormous

1   remedies even when the service provided to CLEC and Ameritech Illinois customers is in

2   parity.

3 Q.   **WHAT IS YOUR GENERAL ASSESMENT OF THE PLAN PROPOSED BY**

4   **AMERITECH ILLINOIS?**

5 A.   The Ameritech Illinois plan meets both of the important criteria I mentioned above. The

6   plan is clearly implementable, as is evident from the fact that it has been used hundreds

7   of times across multiple states. Second, the Ameritech Illinois plan uses well-established

8   statistical methods that are widely accepted in the scientific community and by the

9   CLECs' own statistical experts to determine when disparity exists. Based on these

10   statistical tests, Ameritech Illinois has developed a remedy plan that imposes payments

11   when there is a reasonable degree of scientific certainty that disparity exists, and which

12   do not arbitrarily assess remedy payments when Ameritech's service is in parity.

13 Q.   **DOES THIS CONCLUDE YOUR TESTIMONY?**

14 A.   Yes.